

10/527,949 04/01/2008

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(FILE 'HOME' ENTERED AT 11:31:37 ON 01 APR 2008)

FILE 'CAPLUS' ENTERED AT 11:31:46 ON 01 APR 2008

E CHROMIUM+ALL/CT

L1 616344 S CHROMIUM OR CHROMATE OR CR
L2 4033723 S REDUC? OR REMOV?
L3 80429 S L1 (L) L2
L4 16436 S IRON (2A) SULFATE
L5 132 S L3 (L) L4
L6 259339 S PPM
L7 17 S L5 AND L6
L8 70781 S (CHROMIUM (2A) OXIDE) OR (CR2O3)
L9 2325 S CRO
L10 72423 S L8 OR L9
L11 15 S L5 AND L10
L12 28 S L7 OR L11

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L7 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1482105 CAPLUS <<LOGINID::20080401>>

TITLE: Additive for reduction of water-soluble cr(vi) content in cement, a process of its preparation, cement or dry plaster mixture containing the additive and a process of its preparation

INVENTOR(S): Smrckova, Eva; Jaklovsky, Stefan; Kepes, Robert

PATENT ASSIGNEE(S): Zeocem, A. S., Slovakia

SOURCE: Slovakia, 4pp.

CODEN: SLXXFO

DOCUMENT TYPE: Patent

LANGUAGE: Slovak

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SK 285973	B6	20071206	SK 2004-5035	20041223
PRIORITY APPLN. INFO.:			SK 2004-5035	20041223

AB The additive for reduction of water-soluble Cr(VI) content in cement or in dry plaster mixts. comprising from 10 to 75 % by weight of iron sulfate hydrate and to 100 % by weight of natural zeolite is added to clinker during grinding, whereby it is possible to reduce Cr(VI) content in cement to the value lower than 2 ppm. The subject of invention comprises also cement and dry plaster mixts. containing this additive for reduction of water-soluble Cr(VI) content.

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L7 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1261273 CAPLUS <<LOGINID::20080401>>
 TITLE: Influence of different factors on reduction of water-soluble Cr(VI) in cement
 AUTHOR(S): Zvironaite, J.; Krusinskiene, A.; Spokauskas, A.; Gerulis, P.; Mataitis, A.
 CORPORATE SOURCE: Inst. of Thermoinsulation, VGTU, Vilnius, LT-08217, Lithuania
 SOURCE: Chemine Technologija (Kaunas, Lithuania) (2007), (3), 39-44
 CODEN: CTHEBZ; ISSN: 1392-1231
 PUBLISHER: Technologija
 DOCUMENT TYPE: Journal
 LANGUAGE: Lithuanian

- AB Compds. of water-soluble hexavalent chromium, which occur in trace concns. in cement, can harm the health of building workers. European Directive 2003/53/EC states that the content of water-soluble Cr(VI) in cement which can contact human skin should not exceed 2 ppm, i.e. Cr(VI) should be reduced to insol. Cr(III). The most frequently used Cr(VI) reducer is iron(II) sulfate hydrate $\text{FeSO}_4 \cdot n\text{H}_2\text{O}$. The influence of environmental factors on the variation of Cr(VI) content in reduced cements was studied in the present work. It was found that a short-term contact of reduced cement with environmental air almost does not have any influence on the content of Cr(VI). The duration of reduction mostly depends on the methods of iron(II) sulfate addition. When the reducing agent is milled together with cement, its reduction activity increases because of the high fineness; a smaller amount of it is needed, but it loses faster the reduction properties in stored cement. Increased temperature decreases the reduction potential of $\text{FeSO}_4 \cdot n\text{H}_2\text{O}$ during the milling process. When the reducing agent is admixed with milled cement, the reduction duration is higher, but a larger amount of reducer is needed and it is essential to mix it evenly. The content of Cr(VI) decreases during the setting of cement, because it is incorporated into non-soluble neoformations.
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L7 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:1332195 CAPLUS <<LOGINID::20080401>>

DOCUMENT NUMBER: 147:506756

TITLE: Reduction of the chromate content in cement-a prospective task for Russian cement producers

AUTHOR(S): Kroichuk, L. A.

CORPORATE SOURCE: OAO "NIITsement", Moscow, Russia

SOURCE: Stroitel'nye Materialy (2006), (10), 54-55

CODEN: STRMAC; ISSN: 0585-430X

PUBLISHER: OOO RIF "Stroimaterialy"

DOCUMENT TYPE: Journal; General Review

LANGUAGE: Russian

AB A review. Decreasing of Cr(VI) content in cement according to European and Russian stds. is discussed with a brief characterization of conventional methods and approaches used in the building material industry. The new standard content of Cr(VI) in cement is ≤ 2 ppm and the main method to provide this level of Cr(VI) content is reduction of Cr6+ to Cr3+ which is practically insol. in water. This can be done by reduction of Cr(VI) by FeSO4·nH2O to precipitate Cr(OH)3.

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IT 7720-78-7, Iron sulfate (FeSO4)

RL: RGT (Reagent); RACT (Reactant or reagent)

(reduction of Cr6+ to Cr3+ for decreasing of Cr(VI) content in cement)

L7 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:1259002 CAPLUS <<LOGINID::20080401>>

DOCUMENT NUMBER: 146:446316

TITLE: Chromate reduction of cement - effect on concrete properties?

AUTHOR(S): Haerdtl, Reiner; Dietermann, Martina; Bolte, Gerd

CORPORATE SOURCE: HeidelbergCement AG, Leimen, Germany

SOURCE: ZKG International (2006), 59(10), 88-90,92-94

CODEN: ZKGIFW; ISSN: 0722-4397

PUBLISHER: Bauverlag BV GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English/German

AB European Directive 2003/53/EG states that only cements with a content of water-soluble chromate of less than 2 ppm may be placed on the market or used. Compliance with the upper limit for chromate is usually ensured by carefully controlled addition of a chromate reducer, e.g. iron(II) sulfate, during cement production This makes a slight change to the sulfate regime in the cement, which can be offset by appropriate optimization of the setting regulator. The results of the investigation show that no changes in the fresh and hardened concrete that have any practical relevance occur under these conditions.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L7 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:622522 CAPLUS <<LOGINID::20080401>>

DOCUMENT NUMBER: 137:236460

TITLE: Low-chromate cements for improved industrial safety

AUTHOR(S): Schneider, M.; Lipus, K.

CORPORATE SOURCE: Forschungsinstitut der Zementindustrie, Duesseldorf, Germany

SOURCE: ZKG International (2002), 55(6), 86-95

CODEN: ZKGIFW; ISSN: 0722-4397

PUBLISHER: Bauverlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English/German

AB In the industry regulation "Low-chromate cements and products" the German cement industry had committed itself to produce bagged cements only in low-chromate form, starting in 2000. The aim of this commitment was to make a significant reduction in the number of cases of chromate dermatitis. According to the TRGS 613 anal. instructions a cement counts as low-chromate if it contains ≤ 2 ppm water-soluble chromate, relative to the dry mass. The main reducing agent used in the German cement industry is iron sulfate granules, which ensures good stability and shelf life. However, excessive chromate values were found repeatedly in the official analyses in spite of the fact that in practice the level of addition of the chromate reducing agent is many times higher than necessary so that chromate should no longer be detectable. Comprehensive investigations by the Research Institute of the Cement Industry have now confirmed that the "shaking" method of elution permitted as an alternative by the TRGS 613 gives increased levels of chromate because the reducing agent is not completely dissolved by this procedure and is therefore not fully effective. Comparison analyses on stirred samples and on mortars, which closely resemble the situation during use, gave conclusive proof of the adequate addition level and effectiveness of the reducing agent in German bagged cements. The German cement industry has therefore demonstrated that the measures agreed in the industry regulation are being implemented. The revision of the TRGS 613 anal. instructions, in which "stirring" is to be stipulated as the sole method of digestion, was agreed by the industrial safety authorities.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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IT 10124-49-9, Iron sulfate

RL: MOA (Modifier or additive use); USES (Uses)
(reducing agent; methods of reduction Cr6+ and
regulation of Cr concentration in chromate cements for
improved industrial safety)

L7 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:355180 CAPLUS <<LOGINID::20080401>>

DOCUMENT NUMBER: 137:9762

TITLE: Technical relationships in the manufacture and
analysis of low-chromate cements

AUTHOR(S): Puntke, S.; Wassing, W.

CORPORATE SOURCE: Forschungsinstitut der Zementindustrie, Dusseldorf,
Germany

SOURCE: ZKG International (2002), 55(3), 82-88,90-93

CODEN: ZKGIFW; ISSN: 0722-4397

PUBLISHER: Bauverlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English/German

AB The German cement industry has committed itself in a trade regulation to manufacture only low-chromate bagged cements after 2000, for which a limit of 2 ppm water-soluble chromate is specified in TRGS (Tech. Regulation for Hazardous Substances) 613. Bagged cements containing higher levels of chromate must be treated with a suitable reducing agent to ensure chromate reduction at the time of the use. Since the trade regulation came into force numerous bagged cements were checked by the BauBG (construction trade cooperative assocns.), the FIZ (Research Institute of the Cement Industry) and the cement works labs. Evaluation has shown that no agreement over the chromate levels can be achieved with the existing anal. instructions. According to the results from the BauBG only .apprx.20% of the cements declared as "low-chromate in accordance with TRGS 613" would comply with the limit of 2 ppm. These values were not in general confirmed during comparison analyses by the cement manufacturers. The causes of the deviations and the actual situation with German bagged cements were determined at the FIZ by basic investigations into chromate reduction and by checking the possible influencing factors resulting from the interpretation of the anal. instructions. It is apparent that FeSO4 is suitable as a reducing agent. Its use in the form of granules guarantees good storage stability and ensures effective chromate reduction at the time of use. However, the reduction potential of these granules cannot be fully activated by passive dissolving ("shaking") when the chromate levels are checked, so the existing anal. instructions in TRGS 613 need to be amended. Fresh mortars produced with bagged cements for comparison purposes were significantly below the limit of 2 ppm. The investigations have also shown

that the metering system used in the cement industry is suitable for ensuring accurate and uniform addition. The results confirm that the trade regulation is being implemented in the German cement industry.

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IT 7720-78-7, Iron sulfate (FeSO_4)
 RL: MOA (Modifier or additive use); USES (Uses)
 (reducing agent; effect of treating with FeSO_4
 reducing agent on Cr+6 and chromate
 contents in manufacture low-chromate cements)

L7 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1988:596508 CAPLUS <<LOGINID::20080401>>
 DOCUMENT NUMBER: 109:196508
 TITLE: Treatment of chromium(6+)-containing sludge
 AUTHOR(S): Yin, Futang; Wu, Jiedar; Li, Kannian; Li, Dingyu
 CORPORATE SOURCE: Tongji Univ., Shanghai, Peop. Rep. China
 SOURCE: Shanghai Huanjing Kexue (1988), 7(2), 19-21
 CODEN: SHUKE9; ISSN: 1000-3975
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

AB For the treatment of Cr6+-containing wastewater sludge, the Cr6+ was leached from the sludge with waste H_2SO_4 prior to filtration. After drying, the residue was mixed with FeSO_4 until the particle size was < 140 mesh. When the products (10 g) were placed in water (100 mL), the amount of Cr leached was <1 ppm. The sludge could be used for manufacturing building materials.

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10/527,949 04/01/2008

IT 7720-78-7, Iron sulfate (FeSO4)
RL: PROC (Process)
(wastewater treatment sludge mixing with, for chromium
removal)

L7 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1987:540512 CAPLUS <<LOGINID::20080401>>
DOCUMENT NUMBER: 107:140512
ORIGINAL REFERENCE NO.: 107:22575a,22578a
TITLE: Treatment of cement manufacturing wastewater
INVENTOR(S): Akasaki, Masateru
PATENT ASSIGNEE(S): Naigai Kagaku Seihin K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 62065787	A	19870325	JP 1985-203797	19850914
PRIORITY APPLN. INFO.:			JP 1985-203797	19850914
AB Alkaline wastewater containing Cr6+ and Ca(OH)2 discharged from concrete manufacturing is dosed with FeSO4.7H2O to precipitate H2O-insol. Cr(OH)3, and neutralized after separation of the precipitate The process does not require the multiple pH adjustments required for conventional precipitation of Cr6+. Thus, a wastewater saturated with Ca(OH)2 containing Cr6+ 5 ppm was treated with FeSO4.7H2O 400 ppm (0.94 of stoichiometric requirement) and precipitated The supernatant contained ≤0.1 ppm of Cr (≥98 % removal).				
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IT Concrete (wastewater from manufacture of, hexavalent chromium removal from, iron sulfate in)				
IT Wastewater treatment (precipitation, hexavalent chromium removal from concrete manufacturing effluents by, iron sulfate in)				
IT 7720-78-7 RL: PROC (Process) (wastewater treatment, precipitation, hexavalent chromium removal from concrete manufacturing effluents by, iron sulfate in)				

L7 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1986:465786 CAPLUS <<LOGINID::20080401>>

DOCUMENT NUMBER: 105:65786
 ORIGINAL REFERENCE NO.: 105:10643a,10646a
 TITLE: Treatment of tannery wastewater
 AUTHOR(S): Correa H., Horacio; Rodriguez C., Alfredo; Soto A., German
 CORPORATE SOURCE: Fac. Ing., Univ. Santiago de Chile, Spain
 SOURCE: Contribuciones Cientificas y Tecnologicas (1984), 14(69), 29-36
 CODEN: CCTEDC; ISSN: 0716-0127
 DOCUMENT TYPE: Journal
 LANGUAGE: Spanish

AB In the treatment of segregated wastewaters in a tannery plant, S2- was removed by aeration and precipitation with FeSO4 catalyzed by MnSO4 giving a S2-

removal efficiency of >88.8%. The final effluent had <9 ppm S2- when mixed with effluents from the treatment of non-S2- wastewaters. Cr was removed by a mixture of 26% MgO and 74% NaOH at 23°.

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IT Wastewater treatment
 (aeration, of tannery effluent containing sulfides, precipitation with iron sulfate in conjunction with, chromium removal in relation to)

L7 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1981:213151 CAPLUS <<LOGINID::20080401>>
 DOCUMENT NUMBER: 94:213151
 ORIGINAL REFERENCE NO.: 94:34811a,34814a
 TITLE: Elimination of chromate in cement
 AUTHOR(S): Reifenstein, H.; Paetzold, M.
 CORPORATE SOURCE: Wiss.-Tech. Zent. Arbeitsschutz, Minist. Bauwes., Berlin, DDR-1136, Ger. Dem. Rep.
 SOURCE: Zeitschrift fuer die Gesamte Hygiene und Ihre Grenzgebiete (1980), 26(9), 625-8
 CODEN: ZHYGAM; ISSN: 0049-8610
 DOCUMENT TYPE: Journal
 LANGUAGE: German

AB Portland cement produced in the German Democratic Republic may have Cr(VI) contents of ≤20 ppm. Such concns. of Cr(VI) can be harmful to the skin of cement workers and masons, leading to lesions of allergic cement eczema. The formation of Cr(VI) in cement clinkers is caused by burning of the clinkers in the oxidizing atmospheric of the rotary kiln, whereby Cr (III) in sand, clay, and lime is converted to H2O-soluble Cr(VI). Testing for Cr(VI) is done in the filtrate of aqueous suspensions of cement with di-Ph carbazide spectrophotometrically. Addns. of 0.1-0.5% FeSO4·7 H2O or (NH4)2Fe(SO4)2 reduce the soluble Cr(VI) to insol. Cr(III), the most economical compound being an FeSO4 solution Aspects of combating cement eczema are discussed.

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ST chromate removal cement eczema; iron
sulfate cement chromate removal

L7 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1979:43530 CAPLUS <<LOGINID::20080401>>
DOCUMENT NUMBER: 90:43530
ORIGINAL REFERENCE NO.: 90:6921a,6924a
TITLE: Treatment of chromium-containing powders
INVENTOR(S): Minato, Toshio; Morishita, Takuya; Tada, Minoru
PATENT ASSIGNEE(S): Sakai Chemical Industry Co., Ltd., Sakai, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 53113266	A	19781003	JP 1977-28437	19770314
JP 59039368	B	19840922		

PRIORITY APPLN. INFO.: JP 1977-28437 A 19770314

AB A dust is slurried with $\geq 0.5\%$ FeSO₄·7H₂O to reduce the Cr⁶⁺ to Cr³⁺. The slurry (10% solids) is adjusted to pH ≥ 7.5 . The method is useful for treating steel [12597-69-2]-manufacture dust. Thus, 1 kg slurry (10% dust) containing 20 ppm Cr⁶⁺ was mixed with 160 mL 90 g FeSO₄·7H₂O/L, then adjusted to pH 8 to prevent Cr⁶⁺ pollution.

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